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Date of Application, 10th Jan., 1913

Complete Specification Left, 11th Aug., 1913—Accepted, 10th Feb., 1914

PROVISIONAL SPECIFICATION.

Improved Means for Generating Alternating Electric Currents.

I, Guglielmo Marconi, LL.D., D.Sc., of Marconi House, Strand, London, W.C., do hereby declare the nature of this invention to be as follows:—

The object of this invention is to provide improved apparatus for generating alternating currents and especially currents of high frequency such as are employed in wireless telegraph and telephone transmitters.

According to this invention I employ, as a primary or exciting circuit, a circuit formed of a number of wires secured at equal distances apart upon the surface of a cylinder formed of insulating material; each wire is parallel to the axis of the cylinder and is connected to the next at opposite ends alternately so that the whole series forms a continuous zig-zag circuit.

The secondary circuit is preferably formed of an equal number of wires similarly arranged upon a co-axial cylinder which is likewise of insulating material and is capable of rapid rotation about the common axis so that if a continuous current be passed through the primary circuit, a rapidly alternating current is induced in the secondary circuit.

The secondary circuit may however be formed of a number of wires connected in parallel instead of in series but in this case the number of such wires is half the number in the primary circuit.

If desired the primary cylinder may be rotated and the secondary be fixed or both may be rotated, one in the opposite direction to the other.

In order that the rotating cylinder may be strong enough to withstand the effects of rapid rotation I preferably strengthen it by coils of wire, such as piano wire, covered with insulating material to prevent eddy currents.

Dated this 10th day of January, 1913.

CARPMAEL & Co.,
Agents for Applicant,
24, Southampton Buildings, London, W.C.

COMPLETE SPECIFICATION.

Improved Means for Generating Alternating Electric Currents.

I, Guglielmo Marconi, LL.D., D.Sc., of Marconi House, Strand, London, W.C., do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The object of this invention is to provide improved apparatus for generating alternating currents and especially currents of high frequency such as are employed in wireless telegraph and telephone transmitters.

[*Price 8d.*]

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According to this invention I employ, as a primary or exciting circuit, a circuit formed of a number of wires secured at equal distances apart upon the interior or exterior surface of a cylinder formed of insulating material; each wire is parallel to the axis of the cylinder and is connected to the next at opposite ends alternately so that the whole series forms a continuous zigzag circuit, the ends of which are connected to a source of current.

The secondary circuit is preferably formed of an equal number of wires similarly arranged upon a co-axial cylinder which is likewise of insulating material and is capable of rapid rotation about the common axis so that if a continuous current be passed through the primary circuit, a rapidly alternating current is induced in the secondary circuit.

The secondary circuit may however be formed of a number of wires connected in parallel instead of in series but in this case the number of such wires is half the number in the primary circuit.

If desired the primary cylinder may be rotated and the secondary be fixed or both may be rotated, one in the opposite direction to the other.

In order that the rotating cylinder may be strong enough to withstand the effects of rapid rotation I preferably strengthen it by coils of wire, such as piano wire, covered with insulating material to prevent eddy currents.

Figure 1 is a diagrammatic section of an apparatus constructed according to this invention the wires being omitted.

a is the inner cylinder keyed to the shaft *b* which is driven by the pulley *c* fixed to it. *d* is the outer cylinder loose upon the shaft *b* and driven by the pulley *e*.

Figure 2 is a developed view of the inside of the outer cylinder *d* and Figure 3 is an end view of the outer cylinder to a larger scale than Figures 1 and 2. As is shown at Figures 2 and 3 the interior of the cylinder *d* has ridges or teeth d^1 formed upon it and the wire *f* is wound backwards and forwards between these teeth. The outside of the cylinder *d* is wound with pianoforte wire which is not shown. The inner cylinder *a* may be provided with outwardly projecting ridges or teeth between which the winding is placed, but if this cylinder also is to be rotated at a high speed its construction is preferably similar to that of cylinder *d*.

Figure 4 shows an alternative arrangement of circuits the primary circuit *g* being wound as above described whilst the secondary circuit *h* consists of a number of parallel wires connected together in parallel. As will be seen there are twice as many parallel wires in *g* as in *h*.

I am aware that Specification No. 4844 of 1878 describes the winding of two wires in zigzag form in longitudinal grooves in two co-axial cylinders and I do not desire to make any claim to this method of winding *per se*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Apparatus for generating alternating currents and comprising a primary circuit consisting of a number of parallel wires or parallel branches of the same wire connected in series with a source of current and arranged on the surface of a cylinder, a secondary circuit similarly consisting of a number of parallel wires or parallel branches of the same wire, unconnected with the primary circuit and arranged on the surface of a co-axial cylinder and means for rotating one or both cylinders substantially as described.

2. Means for generating alternating electric currents substantially as described and illustrated in the drawings.

Dated this 9th day of August, 1913.

G. MARCONI.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1914.

A.D. 1913. JAN. 10. No 802.

MARCONI'S COMPLETE SPECIFICATION.

(1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 2.

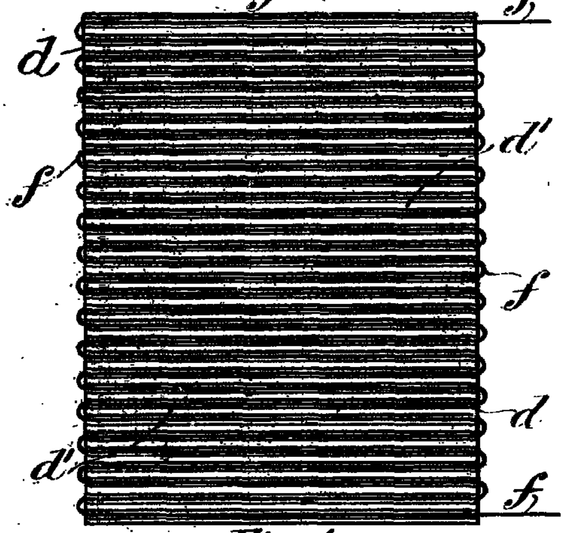


Fig. 1.

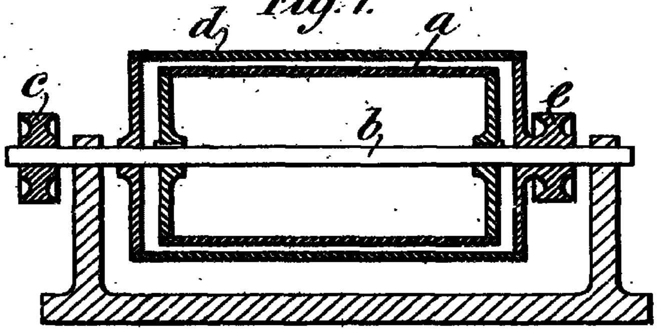


Fig. 3.

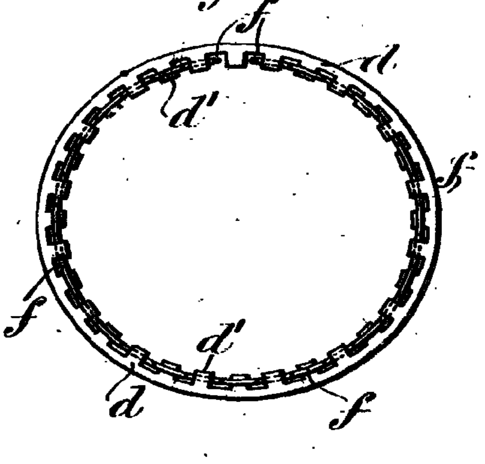
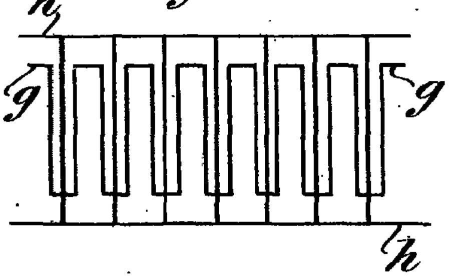


Fig. 4.



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